



Emerging Technologies: Implications for the Nepalese Tourism Industry

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Abstract.

This paper intends to present the potential technologies for sustainable tourism development and promotion of Nepal. Based on secondary literature, various emerging technologies that help to reduce manual works, maximize productivity and ensure the physical security of entities have been explored in the paper. Similarly, some challenges of technological interventions and needful steps to overcome the obstacles are also illustrated. Moreover, this paper also addresses the impacts of the prevailing COVID-19 crisis on tourism in Nepal and puts forward the needful suggestions to mitigate the crisis. It is hoped that this paper can be a reference to scholars, tourism stakeholders, and policymakers as it delivers plentiful information on the potentialities and feasibilities of ICT implementation in Nepal.

Kata Kunci:

TIK;
Parwisata;
Nepal;
Krisis covid-19.

Abstrak.

Makalah ini bermaksud untuk menyajikan teknologi potensial untuk pengembangan pariwisata berkelanjutan dan promosi Nepal. Berdasarkan literatur sekunder, berbagai teknologi baru yang membantu mengurangi pekerjaan manual, memaksimalkan produktivitas dan memastikan keamanan fisik entitas telah dieksplorasi di koran. Demikian pula, beberapa tantangan intervensi teknologi dan langkah-langkah yang diperlukan untuk mengatasi hambatan juga diilustrasikan. Selain itu, makalah ini juga membahas dampak krisis COVID-19 yang terjadi pada pariwisata di Nepal dan mengedepankan saran yang diperlukan untuk mengurangi krisis tersebut. Diharapkan makalah ini dapat menjadi referensi bagi para sarjana, pemangku kepentingan pariwisata dan pembuat kebijakan karena dapat memberikan informasi yang berlimpah tentang potensi dan kelayakan implementasi TIK di Nepal.

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1. Introduction

The integration of ICT in the tourism industry has helped in improving customer services, enriching travel experiences, and replacing human labor with technology. The early evolution of ICT on tourism took place around the 1950s. As stated by Ma, Buhalis, and Song (2003), “Information communication technologies have been applied in tourism since the early adoption of Computer Reservation System (CRS) in airlines in the 1950s and in the transformation to Global Distribution Systems (GDSs) in the 1980s. Hotel property management systems and hotel CRS systems appeared shortly afterward, bringing switch companies into the market as well in order to improve interconnectivity and interoperability” (p.3). The importance of ICT in tourism, the potentials, and challenges to overcome while implementing the emerging technology in Nepal are crucial to comprehend for transforming operations digitally and compete seamlessly in the global market. Moreover, due to the digital interaction features, the

adoption of emerging technologies has also been an essential way to substitute manual work and in-person communication during the COVID-19 crisis.

Tourism is one of the major cornerstones of the Nepalese economy. Nepal is rich in its unique culture and tradition, biodiversity and magnificent geographical variation from plain land referred to as “Terai” to the world’s top mountains including the glorious Mt. Everest. The Ministry of Foreign Affairs (n.d.) stated that possessing 8 of the 10 highest mountains in the world, Nepal is a hotspot destination for mountaineers, rock climbers, and people seeking adventures. The Hindu, Buddhist, and other cultural heritage sites of Nepal, and around the year fair weather are also strong attractions (para 4). Having such enormous potentials, Nepal still lags behind the optimum application of ICT to upgrade the quality standard and promote tourism on an international platform.

As per the Travel and Tourism Competitiveness Index 2019 published by World Economic Forum, Nepal is ranked at 102nd position out of 132 countries. As mentioned in the World Economic Forum (2019), improved competitiveness can be attributed primarily to performance on the following six pillars: (a) Air Transport Infrastructure (b) ICT Readiness (c) Price Competitiveness, (d) International Openness (e) T&T Prioritization and (f) Safety and Security (p. 6). This analysis depicts that it is high time for Nepal to have readiness in ICT implementation.

Since most of the tourism operations are conducted manually in Nepal, there is a necessity for feasible technologies that could ease tourists and tourism stakeholders in information gathering and dissemination via application or other display units. In addition, tourist’s safety and convenience can be ensured with the adoption of ICTs like digital payment, online booking systems, and GPS/GIS.

The objectives of the study, (a) To identify the feasible technologies to speed up the tourism operations and improve customer experiences; (b) To encounter the setbacks of ICT implementation in Nepal’s tourism; (c) To assess the effects and opportunities of the COVID-19 crisis on Nepal’s tourism sector. The structure of this paper as follows: introduction, methodology, result and finding, and conclusion.

2. Methods

This study is undertaken after reviewing several scholarly and non-scholarly sources like books, journals, newspapers, and articles on the importance of ICT and the impacts of the COVID-19 crisis on tourism. The research attempts to fulfill the gap in addressing the potential issues that halt ICT implementation in Nepal’s tourism sector. Moreover, it also aims to fill the void of unexplored circumstances of the COVID-19 crisis, its impacts, and opportunities in Nepal’s context through thorough research on several articles and reports.

The study is exploratory as it aims to outline the significance, potentials, and possible challenges of ICT implementation and implications of the COVID-19 in the tourism industry of Nepal. Several case studies of the application of ICT in other countries were discussed. The study is based on secondary data. Recent data were retrieved from websites, travel magazines, official tourism records, and the government and private organizations’ reports.

3. Results and Findings

3.1 *Contribution of the travel and tourism in the country’s GDP*

As per the report of the World Travel and Tourism Council (2019), the contribution of the travel and tourism industry to GDP was 6.7 % of the total economy in Nepal in 2019. Likewise, the employer contribution was 6.9% of total jobs in 2019.

3.2 Effects and potential opportunities of COVID-19 in Nepal's tourism

The COVID-19 crisis has jeopardized the world's economy out of which, the tourism sector has been severely affected. The rise in the number of cases around the globe has made the travel sector devastated. Consequently, travel restrictions have been adopted by most of the countries including Nepal to curb the outbreak. As stated by World Trade Organization (2020), as per the analysis by the Asian Development Bank, the outbreak of this deadly disease will hit almost every sector of the Nepali economy, shaving up to 0.13 percent off the gross domestic product and rendering up to 15,880 people jobless (para.1).

The pandemic has led to a downturn in tourist arrival with a cancellation of the Nepal Tourism Year 2020: the much-anticipated landmark in welcoming two million tourists. In addition, World Trade Organization (2020) reported that with this the tourist arrival rate has declined to below 10 percent, from 70 percent before the COVID-19 outbreak. The tourism sector, being one of the largest industries has been contributing 8 percent to Nepal's economy (para. 2).

Having often proved that the tourism sector is more resilient than other sectors of the economy, the expeditious recovery from the crisis has also been experienced in the past. For instance, it was presumed that the tourism sector would require several years to get recovered after the massive earthquake hit the popular tourist destinations of Nepal in 2015. As per the report of the Ministry of Culture, Tourism and Civil Aviation, 538,970 tourists visited Nepal in 2015 which was a 32% decrease while comparing to the previous year. Eventually, the tourist flow bounced back to 753,002 with a 30% increment to the number of 2015. The flow remained in an increasing trend till 2019. Similar observance can be seen in the global context after the SARS outbreak in 2008-2009.

The COVID-19 outbreak can be an opportunity for Nepal to explore and research how other tourists' preferential countries in South Asia like India, Bhutan, Sri Lanka, and Maldives have magnified the tourism business and established as premier holiday destinations in recent years. Moreover, COVID-19 also challenges all to rethink and analyze the major loopholes in the tourism sector before the outbreak. On the other side, Nepal has a huge possibility to grasp the opportunity of attracting scattered tourists by reviving the industry with technological innovations.

Similarly, the rise in webinars and online meetings during the pandemic can also be a good opportunity to develop applications and software like Zoom, GoToMeeting, and others to allow virtual events anywhere and anytime.

3.3 Prospects of emerging technologies

There is a huge potential for emerging technologies in the present context. The tourism sector is expected to create up to US\$305 billion for the industry, migrate US\$100 billion of value to new competitors, and generate US\$700 billion benefits for customers and the wider society (BBC Travel, n.d., para. 3). This data validates the fact that ICT plays a vital role in the rise of new competitors in the tourism industry. Because of the competitive market, the players thrive on generating better quality services and products.

The Department of Information and Technology (DoIT) is the responsible government institution of Nepal established to facilitate citizens with information technology and communication access by collaborating with private sectors. Moreover, one of the goals of the department is also to develop Information Technology Enabled Services (IT-ITeS) Industry (DoIT. 2020). As reported by the 2018 Digital Nepal Framework (2018), Nepal is expected to lead internet penetration by 2025 in comparison to major economies such as China and India, given its growth trend over the next few years. The growing popularity of social media is a crucial driver for internet adoption in Nepal, coming second only to Bhutan in South Asia in social media penetration. As of January 2018, Nepal has nearly 9.3 million Facebook users. Entertainment and video sharing are other popular use cases

with more than 6.4 million registered users on YouTube (p.1). In addition, the government has also projected to set up wireless internet connections in the mountain regions and pilgrimage sites by 2020. Likewise, Rijal (2019, October 1) stated that the regulator has opened a competitive bidding process inviting domestic internet service providers to submit proposals to operate wireless internet services at 41 trekking stops and religious sites, among them Annapurna Circuit, Everest Base Camp, Janaki Temple, Halesi Mahadev, Pathivara, Baraha Chhetra, Kupondole Gurudwara and Jame Masjid. Contractors vying for the Rs180-million project are expected to install and operate Wi-Max and Wi-Fi connections with a dedicated bandwidth of up to 40 Mbps at 22 places around the Annapurna massif including the Muktinath Temple and Thorung La situated at an altitude of 5,416 meters (para 2). This ambitious project would set a milestone in ensuring tourism safety in Nepal.

Referring to the online article published in the Kathmandu Post National daily newspaper, Rijal (2019, July 11) stated “The number of mobile internet users of Nepal has jumped to 14.65 million as of April 2019, up 11 percent as compared to last year’s figure, thanks to increased coverage of 3G and 4G services. This translates to around 400 new mobile internet subscribers every hour” (para.1). This rise in internet users portends a promising future for businesses to develop applications and simultaneously run marketing and promotional activities through mobile technology.

Moreover, the banks and other financial institutions have launched digital payments through their web platforms to facilitate customers. This can also ease tourists and tourism service providers in making payments without cash. In addition, the rise in luxurious hotels in recent times is also another prospect where the Internet of things (IoT) and Artificial Intelligence (AI) can be utilized to a great extent. As per the Hotel Association of Nepal (2017) “it is estimated that around 4,000 new star category rooms will be added by 2020 which means another 1.5 million room nights will be available annually” (p. 13). In 2019, 9 more standard hotels were set up. The total number of standard hotels at present is 138 (Ministry of Culture, Tourism and Civil Aviation, 2019). There is a high potentiality for the successful implementation of emerging technologies in Nepal.

3.4 Feasible emerging technologies for upgrading tourism

The tourism industry is vulnerable to technological change. With the adoption of advanced technology, tourism service operations get speeded up and become efficient. Presented below is a list of emerging technologies that are feasible and can profound positive impacts on a country’s economy.

3.4.1 SMART technology at airports and destinations

Tribhuvan International Airport (TIA) is the only operating international airport in Nepal. Meanwhile, the other two new airports are under construction. SMART technologies like kiosk machines for printing boarding passes and check-in and mobile app for seat and flight information can be initiated at the airport to ease passengers and ensure convenience to them. For example, Air India like other foreign carriers has initiated self-service facilities through kiosk machines placed at the airports, websites, and mobile devices to eliminate queues and reduce time to check-in (Air India, n.d).

Furthermore, the Automated Passport Control (APC) kiosk machines can be placed to let the passengers fill the immigration forms and scan passports electronically. It helps to reduce time and maximize efficiency at the airport. These machines can be seen in the airports of the USA, Canada, and other developing countries. Eligible passengers can proceed directly to one of the APC kiosks to fill the form and scan their passports and thereafter, a receipt is generated. The passenger can bring their passport and the receipt to a CBP officer to finalize their inspection for entry into the United States (U.S. Department of Homeland Security, 2020, para. 2). Likewise, the Internet Protocol (IP)-based advanced video surveillance cameras installed at the various airport departments help to combat crimes, terrorism, and baggage theft. Similarly, the automatic machines can also be placed at

the tourist destinations so that tourists could retrieve needful information about the places nearby and acquire passes/permits.

3.4.2 Use of IoT in hotels and tourism promotion

Internet of things (IoT) is of great significance in providing quality service, enriching customers' experience, and also ensuring the sustainability of tourism. Over the years, IoT has been extensively used by industries to share resources and information through the Machine to Machine (M2M) mechanism. Gartner (2020) predicted that there will be 26 billion more IoT-connected devices by 2020 (p.7).

The use of IoT at hotels includes automated and sensor used lights, phone tv, a/c, and doors with the use of the internet. A hotel operator can privilege the benefits of energy-saving from IoT. With the IoT systems, water and electrical energy can be saved by the integrated sensor that can turn off automatically whenever a guest leaves the room without switching them off. As per the report of Booking.com (2018), about 87% of global travelers prefer sustainable travel. In addition, IoT facilitates a tourist to personalize his/her trip from home itself.

3.4.3 Digital payment

Digital payment eases tourists and tourism-related agencies to undertake transactions electronically without the physical use of checks and cash. Such electronic payment enhances convenience as payments can be done through mobile devices, websites, and applications. Many new players like eSewa, Khalti, Fonepay, and others have initiated the digital payment system incorporating with the banking institutions in Nepal. However, the government restriction on transaction limit as NRs.5.000, NRs.10.000, and NRs.50.000 only at one time, daily and monthly payments respectively, has shrunk the initiation so far. If the restriction is made flexible enough then several competitive advantages could be cashed in.

3.4.4 Recognition technology system to acquire entry pass

Recognition technologies based on sensors, digital fingerprints, automatic indexing systems of images and videos, retinal scans, QR codes, and others can be used for identifying travelers. These technologies can be used at the authorized entry counters that require frequent check-ins. It is useful to authenticate the identification of a traveler/trekker in issuing an entry permit and managing check-in. This technology saves time and efforts in searching his/her previous travel record and filling the information time and again.

3.4.5 Autonomous safety and security system

Autonomous safety and security system is also another useful technology emerged in recent times. Since a considerable number of tourists visit Nepal for trekking and mountaineering purpose, the system to signal hazardous situations, emergencies, and bad weather can save human lives and physical properties. With such forecasts and alerts, tourists can have the preparedness to mitigate the unprecedented circumstances. Moreover, these systems can also help a traveler to skip such situations and plan for the next appropriate time and destination. With the government's upcoming project of establishing reliable and high connection wireless internet service in the mountain areas, rescue operations can be mapped more effectively.

3.4.6 Online reservation and confirmation

As in other countries, reservation of hotel rooms, homestays, and other tourism-related activities can be done through applications and websites like Airbnb, Booking.com. etc. These sites ensure convenience and flexibility in reservation management regardless of any business hours or holidays. Similarly, hand-written application forms used by travel agencies and government institutions to generate entry passes/ permits or visas can be replaced with the online mechanism. Since it is high time for adopting sustainable tourism practices, online forms would be the perfect initiative in saving

resources. Moreover, a huge amount invested to set up the physical structure and deploy human resources at the entry permit counter also can be leveraged in other productive works.

3.4.7 GPS through GIS integration

The Geographical Positioning System (GPS) has been used widely to navigate streets and pathways. Other than the streets, this system can be implemented in Nepal to navigate trails. Losing a trailhead in trekking areas can lead to a major obstruction. Adopting GPS, the chances of losing tracks get minimized. Kharel (2018) mentioned that a GIS-based system is governed by satellites and can easily identify the location of any person having the system (Maybe a mobile phone) and stuck in the disaster. GIS with GPS has been found useful in the 2013 sudden flood in Uttarakhand, the 2014 flood in Kashmir, and even in the 2015 Nepal earthquake (p.181). However, good internet service to run a GIS system is undoubtedly the ultimate requirement.

3.5 Challenges of ICT implementation in Nepal

Although numerous advanced technologies to upgrade the tourism industry have been explored, there are also certain challenges that could possibly impede ICT implementation in Nepal. The tourism sector by nature is susceptible to changes. Any unfavorable situation in the country stimulates to decline in tourist flow which in turn, leads to revenue loss. As mentioned in the 2018 Digital Nepal Framework, (2018) despite the Government-led efforts, growth has been relatively slow, with tourist arrivals to Nepal at a five-year CAGR of only ~4.2% (2013–2017), reaching 940,218 tourists in 2017, primarily owing to underdeveloped infrastructure. To achieve its 2020 target of two million tourists, arrivals will need to increase multifold, at a CAGR of 28.6%, requiring the Government to intensify initiatives to boost the sector (p.59). Insufficient tourism infrastructure is a major concern in the tourism sector of Nepal. Although popular trekking destinations like Annapurna Basecamp (ABC), Mardi Himal Base camp are prominent tourism products, the problem of inadequate rooms to accommodate tourists is a major concern. The limited number of accommodation facilities compel tourists to share rooms with strangers. Government regulations on protecting the natural and cultural integrity of the place are not flexible enough to contemplate the situation. Most of the trekking routes are constructed on public land. Acknowledging this, the government has permitted few residents and hotel owners to run their businesses. Consequently, many trekkers, guides, and porters get stranded in the mountains due to a lack of rooms. However, ICT can help to notify the availability of rooms in such circumstances prior to the travel plan. Still, lack of infrastructure is a major drawback in the tourism industry itself, and the role of ICT in destination promotion and information dissemination falls behind. Likewise, the inflexible government policy to introduce foreign investments in tourism development has also become a major hindrance by far.

Similarly, people living in the mountains and trekking regions are heavily dependent on the tourism industry. Tourism is the only economic source from which most families survive. There can have chances of emanated negative implications if alternative jobs are not set forth before ICT implementation. Furthermore, the majority of people relying on tourism in remote areas are senior citizens. Most of the adults and active human resources from these places have been to foreign lands for employment. This circumstance has often created difficulties to impart technical knowledge of ICT to senior citizens.

Similarly, the internet connectivity in the urban area is also not very reliable to depend on for information retrieval. The cost of the internet is also high which in turn, has made people limit the usage of the internet. As stated by Prasain (2019, July 17), as per the Inclusive Internet Index 2019, “Nepal places near the bottom of Asian nations-4th last overall and last for Affordability with a global rank of 72nd out of 100. Nonetheless, it performs well relative to other low-income countries, ranking 1st for Availability and Readiness” (para 14). Such government interventions and impositions lead to a hike in the cost of ICT installment and implementations.

Meanwhile, the government-planned initiatives to support digital transformation require a large-scale budget and private sectors' collaboration. Moreover, the role of ICT has been limited to small projects like website development and designing, and communication. As stated by the 2018 Digital Nepal Framework, 2018, currently, digitalization efforts are limited to website development for the Ministry of Culture, Tourism and Civil Aviation (MoCTCA) and Department of Tourism while the hospitality industry operates basic CRM and revenue management systems. Nepal has a long way ahead to gain measurable benefits from ICT through the large-scale implementation of digital initiatives in tourism (p. 61). Also, the limitation of digital payment transaction set by the central bank of Nepal is inflexible to expand the digital undertakings.

4. Conclusion

The emerging technologies have plenty of advantages to enhance the quality standard of tourism services and experiences. With the rise in the internet and social media users, there are enormous potentials for tourism businesses and the government to grab the opportune circumstances and embrace the digital transformations for designing tourism products, enriching customer experiences, and promoting products and services in the boundaryless web world. In order to maintain adjustments between technological interventions and job replacement, the government could take initiatives in creating the business markets and industries to utilize the skilled manpower to other employment sectors so that the people's economic security does not get ruined.

The COVID-19 crisis has subsequently impacted global tourism. It might not be wrong to expect that COVID-19 will be creating more turbulence in Nepal's tourism like that in most of the countries. Nevertheless, the latent period can be utilized towards exploration and research of strategy, development, and implementation procedures of ICT in other countries. In addition, more in-depth feasibility studies of suitable technology can be carried out during this period. Secondly, flexible and opportune regulations for establishing tourism enterprises and infrastructures along with protecting natural resources will foster destination development and enhance sustainability practices. Simultaneously, acknowledging and creating awareness of the necessity of ICT implementation in boosting up tourism is extremely essential.

Moreover, adequate funds for research and development need to be planned at the time of preparing budgets in the concerned organizations. Likewise, the government also needs to adopt a befitting policy upon coordinating with concerned stakeholders in setting up the flexible tariff of internet service usage. Similarly, proper economic adjustments are required to be reformed in order to help the job losers and underutilized manpower to maintain their economic security. In addition, an effective strategy and management plan defining the technology ownership and its governance is also equally essential to safeguard the physical and technical entities. Although some successful digital interventions like NepalNow and crowdfunding campaigns, were conducted to reinstate the tourism sector after the earthquake and share updates on the impacts, Nepal still requires to set technological milestones and cross over to stand as a premier destination in the contemporary tourism industry.

The COVID-19 outbreak was prevailing at the time of writing this paper, thus, the study could not include more detailed and figurative data and research on the COVID-19 impacts on tourism in Nepal. The views and opinions from tourism stakeholders were also difficult to obtain in the crisis time, hence, the analysis and interpretation were done based on the researcher's perspectives. The statistical representations are not used to analyze the impact- severity of the present tourism practices in Nepal. Likewise, this study is focused only on Nepal's context and it may not be appropriate to other countries due to economic, socio-cultural, and geographical differences.

Future research could explore more feasible technologies after the COVID-19 crisis. Updated data and figures could be used for comparing the impacts of the COVID-19 on the tourism industry. Moreover, data analysis and interpretations could be done using sample questionnaires and interviews.

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